



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

D5415-1
Job Sheet 193389



POSITIVE RECALL

EFFECTIVE April 10, 2019 AUTH PD
RELEASED 9-APR DATE 19.04.22

Part No: D5415-1

Job Qty: 2 pcs

Part Name: Med Height Saddle



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 4/12/19

Job Tracking No:

Due Date: 4/15/19

Created By: Patrick Lussier

Type: Stock

Description:

Note: D5415 REV.D IPP REV:A 16.09.16 NEW ISSUE DD VERF:JFS IPP REV:B 18.09.18 AS PER DWG REV.C DD VERF:DP IPP REV:C 19.02.15 NOW OUTSOURCE MACHINE DD VERF:JFS

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Lead Time	Sign-off
					Setup Hrs	Run Hrs	Workcenter / Supplier			
100	Purchasing	2 pcs	DP	4/15/19	0.00	0.00	Purchasing - 1			
							Purchasing - 2			
							Purchasing - 3			DP
110	Packaging 2-1 - Receive - B4B	2 pcs		4/15/19	0.00	0.00	Packaging 2 - 1 - B4B			
							Packaging 2 - 2 - B4B			
							Packaging 2 - 3 - B4B			
							Packaging 2 - 5 - B4B			
							Packaging 2 - 4 - B4B			
							Packaging 2 - 6 - B4B			
							Packaging 2 - 7 - B4B			
							Packaging 2 - 8 - B4B			
							Packaging 2 - 9 - B4B			
							Packaging 2 - 10 - B4B			
							Packaging 2 - 11 - B4B			
							Packaging 2 - 12 - B4B			
							Packaging 2 - 13 - B4B			DP
							Packaging 2 - 14 - B4B			APR 15 2019
							Packaging 2 - 15 - B4B			
							Packaging 2 - 16 - B4B			
							Packaging 2 - 17 - B4B			
							Packaging 2 - 18 - B4B			
							Packaging 2 - 19 - B4B			
							Packaging 2 - 20 - B4B			
							Packaging 2 - 21 - B4B			
							Packaging 2 - 22 - B4B			
							Packaging 2 - 23 - B4B			
							Packaging 2 - 24 - B4B			
							Packaging 2 - 25 - B4B			
							Packaging 2 - 26 - B4B			
							Packaging 2 - 27 - B4B			



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
CANADA
TEL.: 1 613 632-5200
Email: sales@dartaero.com
www.dartaerospace.com

Container No: S172514



Part: D5415-1

Job No: 193389

Serial No/Batch: S172514

Revision: D

Inspector:

Exp Date:

Instructions: Various STC's

Date: 04/15/19

					Packaging 2 - 28 - B4B	
					Packaging 2 - 29 - B4B	
					Packaging 2 - 30 - B4B	
					Packaging 2 - 31 - B4B	
					Packaging 2 - 32 - B4B	
					Packaging 2 - 33 - B4B	
					Packaging 2 - 34 - B4B	
					Packaging 2 - 35 - B4B	
					Packaging 2 - 36 - B4B	
111 QC 6	2 pcs	4/15/19	0.00 0.00		QC 6 - 9	DAS
					QC 6 - 68	APR 16 2019 68
					QC 6 - 61	9-89
120 Handfinish - 1-1 Chemical-B4B	2 pcs	4/15/19	0.00 0.20		Handfinish - 1 - 1 - B4B	
					Handfinish - 1 - 2 - B4B	
					Handfinish - 1 - 3 - B4B	
					Handfinish - 1 - 4 - B4B	
					Handfinish - 1 - 5 - B4B	
					Handfinish - 1 - 6 - B4B	
					Handfinish - 1 - 7 - B4B	
					Handfinish - 1 - 8 - B4B	
					Handfinish - 1 - 9 - B4B	
					Handfinish - 1 - 10 - B4B	D.R 19/09/16
					Handfinish - 1 - 11 - B4B	
					Handfinish - 1 - 12 - B4B	
					Handfinish - 1 - 13 - B4B	
					Handfinish - 1 - 14 - B4B	
					Handfinish - 1 - 15 - B4B	
					Handfinish - 1 - 16 - B4B	
					Handfinish - 1 - 17 - B4B	
					Handfinish - 1 - 18 - B4B	
					Handfinish - 1 - 19 - B4B	
					Handfinish - 1 - 20 - B4B	
130 QC 7	2 pcs	4/15/19	0.00 0.00		QC 7 - 10	
					QC 7 - 13	
					QC 7 - 14	
					QC 7 - 15	
					QC 7 - 17	
					QC 7 - 18	
					QC 7 - 19	
					QC 7 - 2	
					QC 7 - 28	
					QC 7 - 3	
					QC 7 - 30	
					QC 7 - 34	
					QC 7 - 36	
					QC 7 - 37	

					QC 7 - 41	AR 19-4-17
					QC 7 - 47	
					QC 7 - 48	
					QC 7 - 51	
					QC 7 - 58	
					QC 7 - 59	
					QC 7 - 60	
					QC 7 - 9	
					QC 7 - 68	
					QC 7 - 50	
					QC 7 - 67	
					QC 7 - 40	
135	Spray Paint - 2 - B4B	2 pcs	4/15/19	0.00 0.50	Spray Paint - 1 - B4B	AR 19-4-17
					Spray Paint - 2 - B4B	
					Spray Paint - 3 - B4B	
					Spray Paint - 4 - B4B	
140	QC 14	2 pcs	4/15/19	0.00 0.00	QC 14 - 15	
					QC 14 - 2	
					QC 14 - 34	
					QC 14 - 41	
					QC 14 - 51	
					QC 14 - 58	
					QC 14 - 59	
					QC 14 - 9	
					QC 14 - 68	
					QC 14 - 40	APR 23 2019
					QC 14 - 19	DAS 40 9-89
150	Packaging 3-1 - Stock - B4B	2 pcs	4/15/19	0.00 0.00	Packaging 3 - 1 - B4B	
					Packaging 3 - 2 - B4B	
					Packaging 3 - 3 - B4B	
					Packaging 3 - 4 - B4B	APR 23 2019
					Packaging 3 - 5 - B4B	
					Packaging 3 - 6 - B4B	
					Packaging 3 - 7 - B4B	
					Packaging 3 - 8 - B4B	
					Packaging 3 - 9 - B4B	
					Packaging 3 - 10 - B4B	
					Packaging 3 - 11 - B4B	
					Packaging 3 - 12 - B4B	
					Packaging 3 - 13 - B4B	
					Packaging 3 - 14 - B4B	
					Packaging 3 - 15 - B4B	
					Packaging 3 - 16 - B4B	
					Packaging 3 - 17 - B4B	
					Packaging 3 - 18 - B4B	
					Packaging 3 - 19 - B4B	
					Packaging 3 - 20 - B4B	
					Packaging 3 - 21 - B4B	
					Packaging 3 - 22 - B4B	
					Packaging 3 - 23 - B4B	
					Packaging 3 - 24 - B4B	
					Packaging 3 - 25 - B4B	
					Packaging 3 - 26 - B4B	
					Packaging 3 - 27 - B4B	
					Packaging 3 - 28 - B4B	
					Packaging 3 - 29 - B4B	
					Packaging 3 - 30 - B4B	
					Packaging 3 - 31 - B4B	
					Packaging 3 - 32 - B4B	



waiting on missing
paperwork
PD 19-04-16
release 19-04-22 PD

				Packaging 3 - 33 - B4B	
				Packaging 3 - 34 - B4B	
				Packaging 3 - 35 - B4B	
				Packaging 3 - 36 - B4B	DAG
160 QC 21 - SA	2 pcs	4/15/19	0.00 0.00	QC 21 - SA - 21	21
				QC 21 - SA - 70	APR 23 2019
				QC 21 - SA - 53	

Part Op 100 - Issue P/O: 042148 Manufacture D5415-1 as per Dwg D5415 Possible supplier: ETM industries Material
Descriptions: release note is required.
110 - (Receive & Inspect for Damage & Mat'l Certs)
111 - (QC6- All purchased or subcontracted products)
135 - PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2.1.3.3 (FLOAT SKIDTUBE PRIMER) 5152590
Batch: PAINT OUTSIDE PER DART QSI 005 4.2.2.4 (FLOAT SKIDTUBE PAINT) 5155827
Batch:
150 - (Identify as per dwg & Stock Location:)
160 - (QC21- Final Inspection - Work Order Release)
x 2 plus

Job BOM				
Part / Item	Component Name	Quantity	Operation	Container
D5415-1P	Mid Height Saddle	2 Ea (1 ea)	100-Purchasing	5172511

Job Allocations				
Operation	Component Part	Required	Inventory	Allocated
100-Purchasing	D5415-1P	2	0	0

Part Specifications				
Specifications could not be found.				

Plex 4/12/19 3:03 PM dart.Lussler.Patrick



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER
PO042148



Supplier: ETM001-VC
E.T.M. Industries Inc.
310 Hall Avenue, Box 610
Renfrew
ON
K7V 4E7 Canada
Phone: 613-432-6136
Fax: 613-432-8212

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

PO No: PO042148
PO Date: 1/3/19
Due Date: 7/3/19
Purchase Order Revision:
Revision Date:
Ship-To Contact: Phone:

Via: Ground
Pymt Terms: Net 30
Freight Terms:
Special Comments:

Revision

Items													
Line Item	Job	Part	Supplier Part No	Item No	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	193389	D5415-1P			Mid Height Saddle : Various STC's	Firmed X2		4/15/19	2 Ea	0 Ea	2 Ea	\$975.00/Ea	\$1,950.00
Line Item Note FIRST ARTICLE INSPECTION BY DART QTY OF 1 BEFORE TOTAL PRODUCTION (MATERIAL 7050-T7451 OR T7651)													
2 first units No Alodine , No Paint													
2	193390	D5415-3P			STD Height Saddle : Various STC's	Firmed X2		4/15/19	2 pcs	0 pcs	2 pcs	\$975.00/pcs	\$1,950.00
Line Item Note FIRST ARTICLE INSPECTION BY DART QTY OF 1 BEFORE TOTAL PRODUCTION (MATERIAL 7050-T7451 OR T7651)													
2 first units No Alodine , No Paint													
Grand Total:												\$3,900.00	

Order Notes

Procurement Quality Clauses
A005 RIGHT OF ENTRY
A008 FIRST ARTICLE INSPECTION (FAI) BY SELLER, (DOCUMENTATION SENT TO DART AEROSPACE)
A012 CHEMICAL AND PHYSICAL TEST REPORTS
A016 PERSONNEL QUALIFICATION
A017 RAW MATERIAL IDENTIFICATION (AS APPLICABLE)
A026 CERTIFICATION OF MATERIAL CONFORMANCE
A041 QUALITY MANAGEMENT SYSTEM
A042 DART NOTIFICATION BY SUPPLIER
A043 RETENTION OF QUALITY DOCUMENT

A048 COUNTERFEIT PARTS AVOIDANCE, DETECTION, MITIGATION AND DISPOSITION PROGRAM

A049 SUPPLIER AWARENESS

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.



Plex 4/15/19 12:52 PM dart.Lussier.Patrick

E.T.M. INDUSTRIES INC.
310 HALL AVENUE
BOX 610
RENFREW, ON K7V 4E7
Canada
Ph: 613-432-6136 Fax: 613-432-8212

Pack List

Number: 142271Date: 12-Apr-19

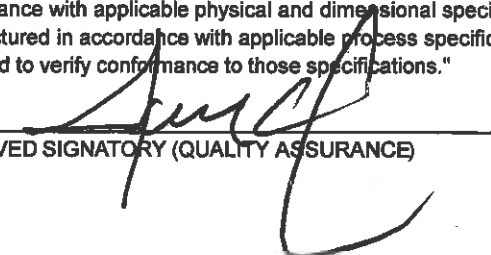
To

DART AEROSPACE
1270 ABERDEEN STREET
HAWKESBURY, ON K6A 1K7
Canada

Ship To

DART AEROSPACE
1270 ABERDEEN STREET
HAWKESBURY, ON K6A 1K7
Canada

Ph: 613-632-5200 Fax: 613-632-5246 Ph: 613-632-5200 Fax: 613-632-5246

Terms		Ship Via	
Net 30 days			
Quantity	Description		
2 each	Part: D5415-1P MID HEIGHT SADDLE:VARIOUS STC SO: 25055 Ordered: 9 **LOT #105809 **PARTS ARE MACHINED ONLY**		
Rev: C PO: PO042148 Line: 002 Backordered: 7			
CERTIFICATE OF COMPLIANCE "I hereby certify that the material described above is in conformance with applicable physical and dimensional specifications; that it was manufactured in accordance with applicable process specifications; and has been inspected to verify conformance to those specifications."  APPROVED SIGNATORY (QUALITY ASSURANCE) DAS 40 9-89			

mv 20 Jun 2019

Entered:

Date:

NCR No. 19-7212

WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

Route update only



Job: 193389		DISPOSITION		DEPARTMENT/PROCESS			
Part No: D5415-1		Rework ☐ Scrap ☐ Use-as-is ☒		Cross tube ☐ Small Fab ☐ Finishing ☒ Rec/Store/Packaging ☐ Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Engineering ☒ Water Jet ☐ Supplier ☐ Quality ☐			
Date: 23 April	Sequence #: 135	QTY Affected: 2		MRB (QSI042) NO 19/04/16			
Description Work Order Deviation		Disposition					
D5415 Rev.D calls for prime all surfaces, paint outside only. This will either require extending the time in finishing or accepting overspray on inside surfaces.		Acceptable to prime and paint all surfaces. This enhances protection and matures the finish of the saddle used in testing (no fit issues).					
Root Cause		FAULT CATEGORY					
Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Preservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☒ Human Factors ☐		Pressure/Forced ☐ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled ☐ Other/Details:		Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐		Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐	
		Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☐ Finish ☒ Part Lost/Missing ☐ Misread ☐					
						Completed By AS 19-4-17 Lead hand / Supervisor AD 19-04-23 QC / QA Coordinator AD 19-04-23	

1. Part Number D5415-1	2. Part Name MID HEIGHT SADDLE	3. Serial Number N/A	4. FAI Number N/A
5. Part Revision Level REV.D	6. Drawing Number D5415-1	7. Drawing Revision Level REV.D	8. Additional Changes N/A
9. Manufacturing Process Reference 105809	10. Organization Name ETM Industries Inc.	11. Supplier Code N/A	12. P.O. Number PO 042148
13. Detail FAI ☒ Assembly FAI ☐	14. Full FAI ☒ Partial FAI ☐ Reason for Partial FAI: Not Applicable	Baseline Part Number including Revision Level N/A	
a) If above part number is a detail part only, go to Field 19 b) If above part number is an assembly, go to the "Index" section below.			
INDEX of part numbers or sub assembly numbers required to make the assembly noted above.			
15. Part Number	16. Part Name	17. Part Serial Number	18. FAI Report Number
N/A	N/A	N/A	N/A

1) Signature indicates that all characteristics are accounted for; meet drawing requirements or are properly documented for disposition.	
2) Also indicate if the FAI is complete per Section 5.4: ☒ FAI Complete ☐ FAI Not Complete	
19. Signature BARRY DUPUIS	20. Date 4/10/19
21. Reviewed by	22. Date
23. Customer Approval	24. Date

AS9102 Revision B First Article Inspection
Form 2: Product Accountability – Raw Material, Specifications and Special Process(es),
Functional Testing

1. Part Number	2. Part Name		3. Serial Number		4. FAI Report Number
D5415-1	MID HEIGHT SADDLE		N/A		N/A
5. Material or Process – Name	6. Specification Number	7. Code	8. Special Process Supplier Code	9. Customer Approval Verification (Yes/No/N/A)	10. Certificate of Conformance Number
MAKE FROM D5415-1C/-3C	7050- T7451 PER AMS 4050 OR- T7651 PER AMS 4201 ALUMINUM PLATE	N/A	N/A	N/A	CONSTELLUM LOT # 9444752
CHEM FILM	CHEMICAL CONVERSION COAT PER DART QSI 005 4.1				
PRIME PER DART QSI 005 4.2.1.3.3	FLOAT SKID TUBE PRIMER “GREEN”	N/A	N/A	N/A	
PRIME PER DART QSI 005 4.2.2.4	FLOAT SKID TUBE PAINT “WHITE”	N/A	N/A	N/A	
11. Functional Test Procedure Number	12. Acceptance report number, if applicable				
Not Applicable	Not Applicable				
13. Comments					
14. Prepared By			15. Date		
BARRY DUPUIS			4/10/19		

1. Part Number D5415-1		2. Part Name MID HEIGHT SADDLE		3. Serial Number N/A		4. FAI Report N/A	
Characteristic Accountability				Inspection / Test Results			
5. Char. No.	6. Reference Location	7. Characteristic Designator	8. Requirement	9. Results	10. Designated Tooling	11. Non Conformance Number	14. Reference Documents
1	SHT1	N/A	MAKE FROM D5415-1C/-3C. 7050-T7451 PER AMS 4050 OR-T7651 PER AMS 4201 ALUMINUM PLATE	ACCEPT	CONSTELLUM LOT # 9444752	N/A	N/A
2	SHT1	N/A	FINISH: PRIME: INSIDE AND OUTSIDE PER DART QSI 005 4.2.1.3.3 (FLOAT SKIDTUBE PRIMER, GREEN) PAINT: OUTSIDE PER DART QSI 005 4.2.2.4 (FLOAT SKID TUBE PAINT WHITE)			N/A	N/A
3	SHT1	N/A	TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED	ACCEPT	VERIFY	N/A	N/A
4	SHT1	N/A	UNITS:INCHES UNLESS OTHERWISE NOTED	ACCEPT	VERIFY	N/A	N/A
5	SHT1	N/A	BREAK SHARP EDGES	N/A	N/A	N/A	N/A
6	SHT1	N/A	IDENTIFICATION:DART P/N "D415-1"OR "D415-3" AND S/N PER QSI044 6.4(VIBRATING STYLUS)PRIOR TO FINISH. DART P/N "D415-1"OR "D415-3" AND S/N PER QSI044 6.4(PAINT MARKER)AFTER FINISH. LOCATE APPROX AS SHOWN.	ACCEPT	VERIFY	N/A	N/A
7	SHT1	N/A	WEIGHT:D5415-1 IS 3.72 LBS.,D5415-3 IS 3.42 LBS.	3.96 LBS.UNFINISHED	KCS 301 DIGITAL SCALE	N/A	N/A
The signature indicates that all characteristics are accounted for; meet drawing requirements or are properly documented for disposition.							
12. Prepared By BARRY DUPUIS				13. Date 4/10/19			

AS9102 Revision B First Article Inspection

Form 3: Characteristic Accountability, Verification and Compatibility Evaluation

Page 4 of 8

1. Part Number		2. Part Name		3. Serial Number		4. FAI Report	
D5415-1		MID HEIGHT SADDLE		N/A		N/A	
Characteristic Accountability				Inspection / Test Results			
5. Char. No.	6. Reference Location	7. Characteristic Designator	8. Requirement	9. Results	10. Designated Tooling	11. Non Conformance Number	14. Reference Documents
8	SHT1	N/A	MASK HOLES PRIOR TO PRIME AND PAINT			N/A	N/A
9	SHT2	N/A	1)MATERIAL:MACHINE FROM ALUMINUM PLATE 7050- T7451 PER AMS 4050 OR-T7651 PER AMS 4201 REF DART SPEC. M7050P	ACCEPT	CONSTELLUM LOT # 9444752	N/A	N/A
10	SHT2	N/A	FINISH:CHEMICAL CONVERSION COAT PER DART QSI 005 4.1			N/A	N/A
11	SHT2	N/A	TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED	ACCEPT	VERIFY	N/A	N/A
12	SHT2	N/A	UNITS:INCHES UNLESS OTHERWISE NOTED	ACCEPT	VERIFY	N/A	N/A
13	SHT2	N/A	BREAK SHARP EDGES:0.005 TO 0.010 MAX. IDENTIFICATION:DART LOGO RAISED ABOVE SURFACE AS SHOWN,MAX 0.015 TOOL RAD. WEIGHT :N/A	ACCEPT	VERIFY	N/A	N/A
14	SHT2	N/A		N/A	N/A	N/A	N/A
15	SHT2	N/A	NO COSMETIC WELD REPAIR ALLOWED IF MACHINED FROM 7050 PLATE	ACCEPT	VERIFY	N/A	N/A
16	SHT2	N/A	NO X-RAY OR FPI REQUIRED IF MACHINED FROM 7050 PLATE	ACCEPT	VERIFY	N/A	N/A
17	SHT2	N/A	ALL NON DIMENSIONED FEATURES MUST MAINTAIN A TOLERANCE OF +/- 0.030 PER CAD FILE D5415-1 REV D.STP	ACCEPT	VERIFY	N/A	N/A
				ACCEPT	VERIFY	N/A	N/A

The signature indicates that all characteristics are accounted for; meet drawing requirements or are properly documented for disposition.

12. Prepared By

BARRY DUPUIS

13. Date

4/10/19

1. Part Number D5415-1		2. Part Name MID HEIGHT SADDLE		3. Serial Number N/A		4. FAI Report N/A	
Characteristic Accountability				Inspection / Test Results			
5. Char. No.	6. Reference Location	7. Characteristic Designator	8. Requirement	9. Results	10. Designated Tooling	11. Non Conformance Number	14. Reference Documents
18	SHT2	N/A	ANY ADDITIONAL MATERIAL REQUIRED FOR POST CASTING MACHINING IS NOT SPECIFIED ON THIS DRAWING.	ACCEPT	VERIFY	N/A	N/A
19	SHT2	N/A	R0.10+/-0.030 2PL.	0.094	RAD. GAUGE	N/A	N/A
20	SHT2	N/A	1.00 +/-0.030	1.001	HEIGHT GAUGE	N/A	N/A
21	SHT2	N/A	0.100 +/-0.010	0.1005	HEIGHT GAUGE	N/A	N/A
22	SHT2	N/A	R 1.790 +/-0.010	1.784	HEIGHT GAUGE	N/A	N/A
23	SHT2	N/A	7.300 +/-0.030	7.298	HEIGHT GAUGE	N/A	N/A
24	SHT2	N/A	1.19 +/-0.030	1.185	HEIGHT GAUGE	N/A	N/A
25	SHT2	N/A	4.33 +/-0.030	4.325	HEIGHT GAUGE	N/A	N/A
26	SHT2	N/A	2.14 +/-0.030	2.142	HEIGHT GAUGE	N/A	N/A
27	SHT2	N/A	R1.0 +/-0.100	1.000	RAD. GAUGE	N/A	N/A
28	SHT2	N/A	R1.0 +/-0.100	1.000	RAD. GAUGE	N/A	N/A
29	SHT2	N/A	75 DEG. +/-1/2 DEG.	75 DEG.	OPTICAL COMPARITOR	N/A	N/A
30	SHT2	N/A	1.00 +/-0.030	0.9995	CALIPERS	N/A	N/A
The signature indicates that all characteristics are accounted for; meet drawing requirements or are properly documented for disposition.							
12. Prepared By BARRY DUPUIS					13. Date 4/10/19		

AS9102 Revision B First Article Inspection										Page 6 of 8	
Form 3: Characteristic Accountability, Verification and Compatibility Evaluation											
1. Part Number		2. Part Name		3. Serial Number		4. FAI Report					
D5415-1		MID HEIGHT SADDLE		N/A		N/A					
Characteristic Accountability				Inspection / Test Results							
5. Char. No.	6. Reference Location	7. Characteristic Designator	8. Requirement	9. Results	10. Designated Tooling	11. Non Conformance Number	14. Reference Documents				
31	SHT2	N/A	0.280 MINIMUM WALL THICKNESS THROUGH TRANSITION	0.295	DIAL CALIPERS	N/A	N/A				
32	SHT2	N/A	0.36 +/-0.030	0.364	DIAL CALIPERS	N/A	N/A				
33	SHT2	N/A	R0.063 +/-0.010 TYP	0.062	RAD. GAUGE	N/A	N/A				
34	SHT2	N/A	3.10 +/-0.030	3.105	HEIGHT GAUGE	N/A	N/A				
35	SHT2	N/A	4.80 +/-0.030	4.798	HEIGHT GAUGE	N/A	N/A				
36	SHT2	N/A	12.86 +/-0.030	12.857	HEIGHT GAUGE	N/A	N/A				
37	SHT4	N/A	0.323 +/-0.010 DIA	0.3225	GAUGE PIN	N/A	N/A				
38	SHT4	N/A	4.10 +/-0.030	4.1015	HEIGHT GAUGE	N/A	N/A				
39	SHT4	N/A	3.565 +/-0.005	3.5625	HEIGHT GAUGE	N/A	N/A				
40	SHT4	N/A	4.30 +/-0.030	4.297	HEIGHT GAUGE	N/A	N/A				
41	SHT4	N/A	1.96 +/-0.030	1.955	HEIGHT GAUGE	N/A	N/A				
42	SHT4	N/A	1.69 +/-0.030	1.686	HEIGHT GAUGE	N/A	N/A				
43	SHT4	N/A	4.32 +/-0.030	4.321	HEIGHT GAUGE	N/A	N/A				
The signature indicates that all characteristics are accounted for; meet drawing requirements or are properly documented for disposition.											
12. Prepared By BARRY DUPUIS										13. Date 4/10/19	

1. Part Number		2. Part Name		3. Serial Number		4. FAI Report	
D5415-1		MID HEIGHT SADDLE		N/A		N/A	
Characteristic Accountability				Inspection / Test Results			
5. Char. No.	6. Reference Location	7. Characteristic Designator	8. Requirement	9. Results	10. Designated Tooling	11. Non Conformance Number	14. Reference Documents
44	SHT4	N/A	3.580 +/-0.010 DIA.	3.579	CALIPERS	N/A	N/A
45	SHT4	N/A	CHAMFER 0.03 +/-0.030 X 45 DEG. TYP.	0.030	HEIGHT GAUGE	N/A	N/A
46	SHT4	N/A	R0.06 +/-0.030	0.062	RAD GAUGE	N/A	N/A
47	SHT4	N/A.	0.250 +/-0.015	0.248	DIAL CALIPERS	N/A	N/A
48	SHT4	N/A	2.30 +/-0.030	2.294	HEIGHT GAUGE	N/A	N/A
49	SHT4	N/A	0.516 +/-0.010 DIA.	0.515	GAUGE PIN	N/A	N/A
50	SHT4	N/A	58 +/-1/2 DEG.	58 DEG.	PROTRACTOR	N/A	N/A
51	SHT4	N/A	20 +/-1/2 DEG.	20 DEG.	PROTRACTOR	N/A	N/A
52	SHT4	N/A	R0.50 +/-0.030 2 PL.	0.500	RAD GAUGE	N/A	N/A
53	SHT4	N/A	R0.40 +/-0.030 2PL.	0.406	RAD GAUGE	N/A	N/A
54	SHT4	N/A	3.85 +/-0.030	3.853	CALIPERS	N/A	N/A
55	SHT4	N/A	0.200 +/-0.015 RIB THICKNESS,TYP.	0.198	CALIPERS	N/A	N/A
56	SHT4	N/A	0.60 +/- 0.010	0.600	GAUGE PIN	N/A	N/A

The signature indicates that all characteristics are accounted for; meet drawing requirements or are properly documented for disposition.

12. Prepared ByBARRY DUPUIS13. Date4/10/19

AS9102 Revision B First Article Inspection

Form 3: Characteristic Accountability, Verification and Compatibility Evaluation

1. Part Number
D5415-1

2. Part Name
MID HEIGHT SADDLE

3. Serial Number
N/A

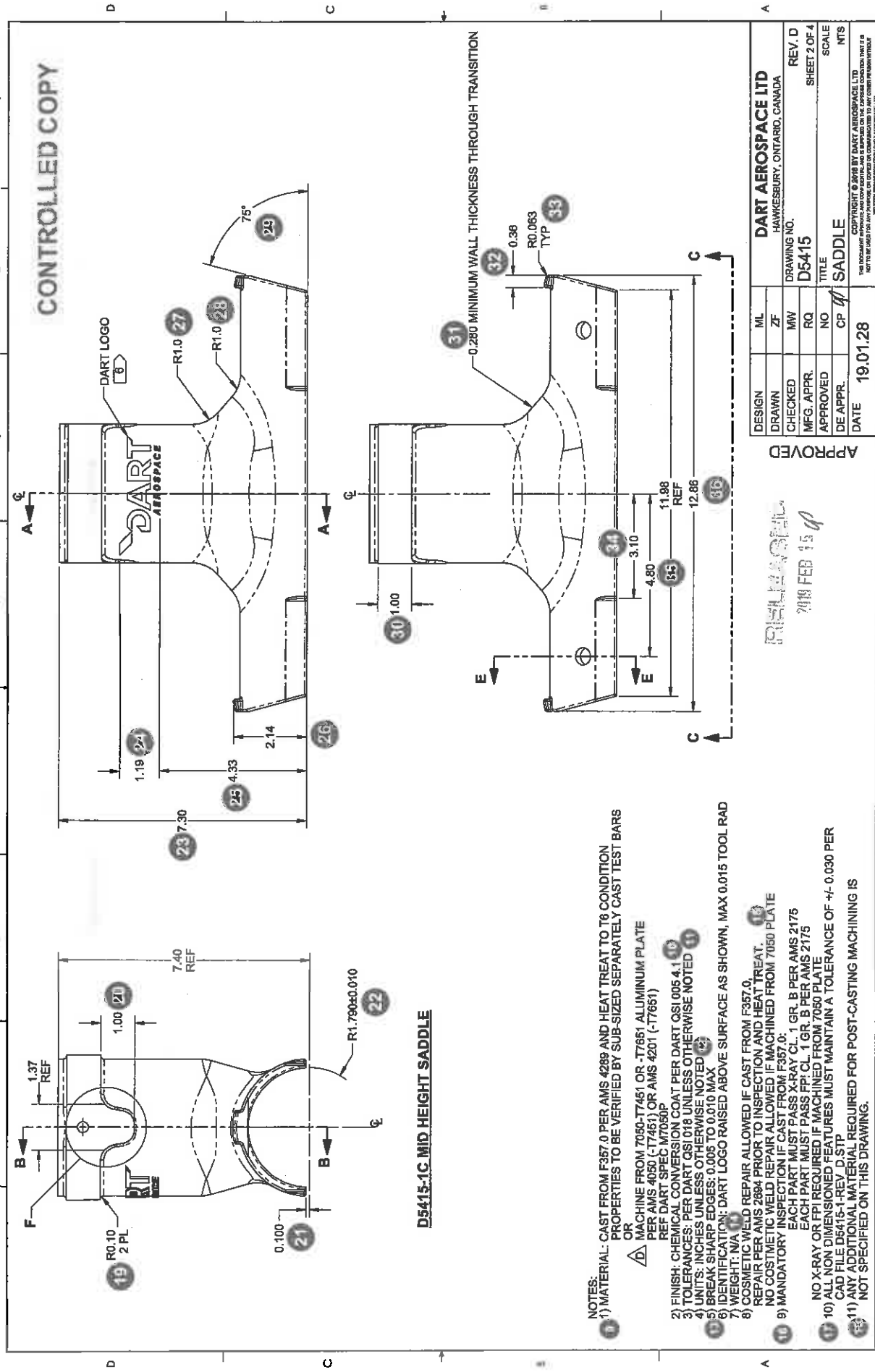
4. FAI Report
N/A

Page 8 of 8

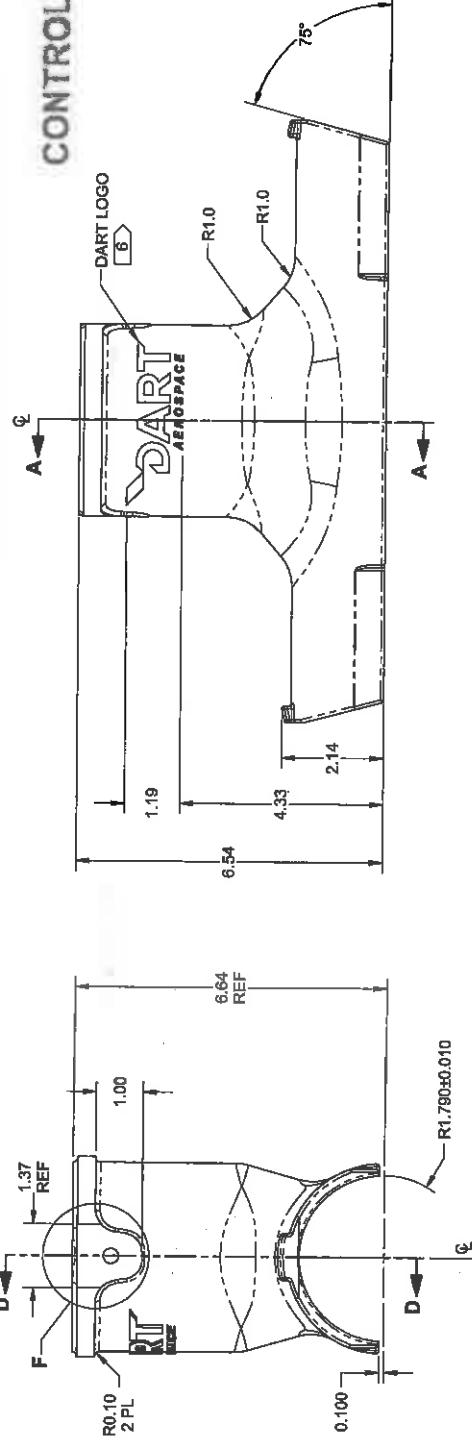
Characteristic Accountability				Inspection / Test Results			
5. Char. No.	6. Reference Location	7. Characteristic Designator	8. Requirement	9. Results	10. Designated Tooling	11. Non Conformance Number	14. Reference Documents
57	SHT4	N/A	0.719 +/-0.010	0.720	BORE MIC.	N/A	N/A
58	SHT4	N/A	0.265 +/-0.015 WALL THICKNESS	0.270	DIAL CALIPERS	N/A	N/A

The signature indicates that all characteristics are accounted for; meet drawing requirements or are properly documented for disposition.

12. Prepared ByBARRY DUPUIS13. Date4/10/19



CONTROLLED COPY



D5415-3C STANDARD HEIGHT SADDLE

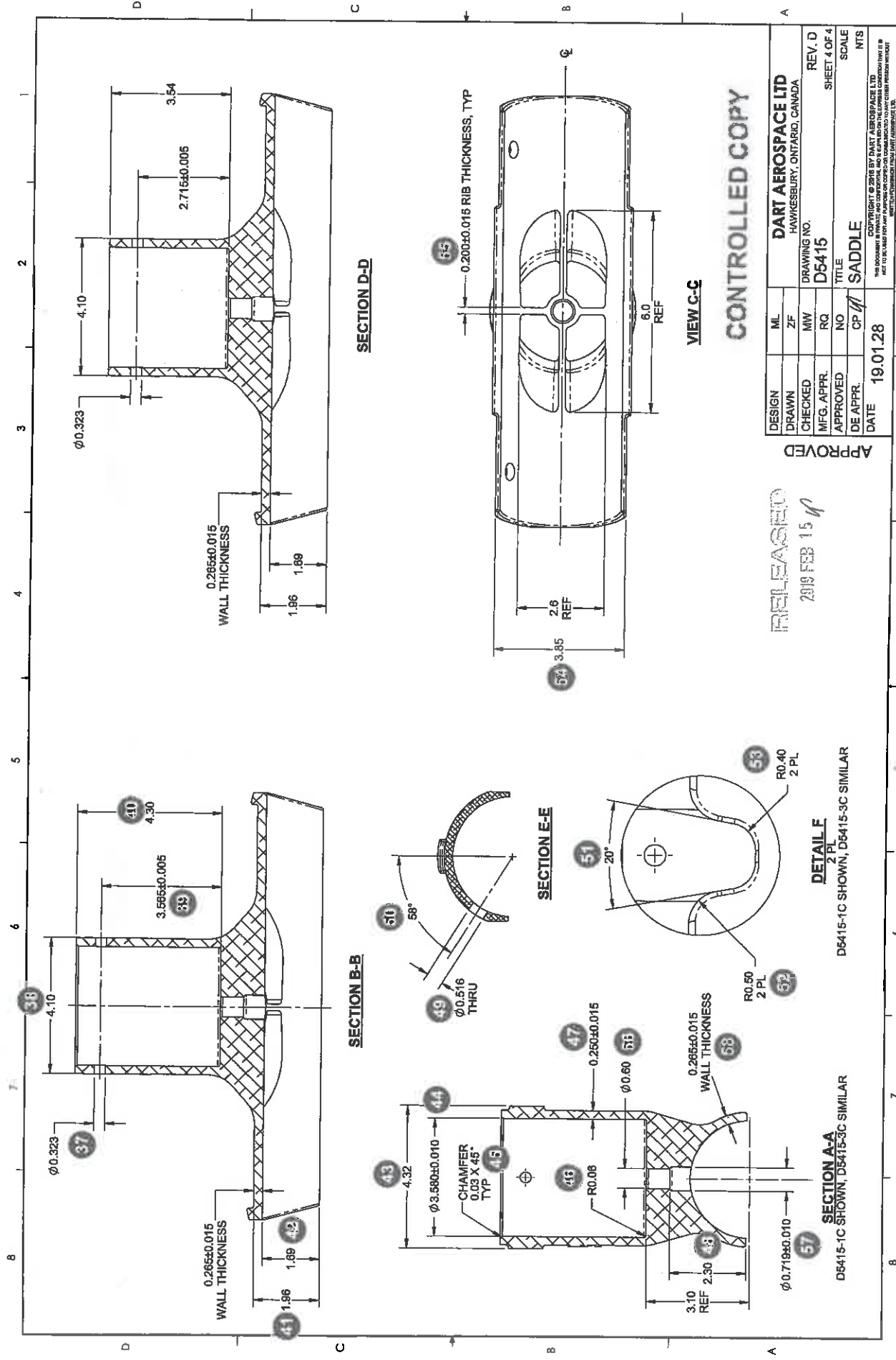
- NOTES:
- 1) MATERIAL: CAST FROM F357.0 PER AMS 4289 AND HEAT TREAT TO T6 CONDITION. PROPERTIES TO BE VERIFIED BY SUB-SIZED SEPARATELY CAST TEST BARS OR PER AMS 4050 (-T7451) OR AMS 4201 (-T7651).
 - 2) FINISH: MACHINE FROM 7050-T7451 OR -T7651 ALUMINUM PLATE PER DART SPEC M7050P.
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED.
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
 - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
 - 6) IDENTIFICATION: DART LOGO RAISED ABOVE SURFACE AS SHOWN, MAX 0.025 TOOL RAD.
 - 7) WEIGHT: N/A.
 - 8) COSMETIC WELD REPAIR ALLOWED IF CAST FROM F357.0.
 - 9) REPAIR PER AMS 2824 PRIOR TO INSPECTION AND HEAT TREAT.
 - 10) NO COSMETIC WELD REPAIR ALLOWED IF MACHINED FROM 7050 PLATE.
 - 11) MANDATORY INSPECTION IF CAST FROM F357.0: 1 GR. B PER AMS 2175 EACH PART MUST PASS FPI CL. 1 GR. B PER AMS 2175.
 - 12) NO X-RAY OR FPI REQUIRED IF MACHINED FROM 7050 PLATE.
 - 13) CAD FILE D5415-3-REV. D.STP.
 - 14) ALL NON DIMENSIONED FEATURES MUST MAINTAIN A TOLERANCE OF +/- 0.030 PER CAD FILE D5415-3-REV. D.STP.
 - 15) ANY ADDITIONAL MATERIAL REQUIRED FOR POST-CASTING MACHINING IS NOT SPECIFIED ON THIS DRAWING.

RELEASED
2010 FEB 15

APPROVED

DESIGN	ML	ML	DART AEROSPACE LTD
DRAWN	ZF	ZF	HAWKESBURY, ONTARIO, CANADA
CHECKED	MM	MM	
MFG APPR	RQ	RQ	D5415
APPROVED	NO	NO	TITLE
DE APPR	CP	CP	SADDLE
DATE	19.01.28	19.01.28	SCALE
			NTS

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RELEASED
2019 FEB 15

APPROVED

DESIGN	ML	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA DRAWING NO. D5415 REV D SHEET 4 OF 4 SCALE NTS COPYRIGHT © 2016 BY DART AEROSPACE LTD THE DOCUMENT IS THE PROPERTY OF DART AEROSPACE LTD. IT IS TO BE USED FOR THE PROJECT AND FOR THE CUSTOMER'S USE ONLY. IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT PERMISSION IN WRITING FROM DART AEROSPACE LTD.
DRAWN	ZF	
CHECKED	MW	
MFG. APPR.	RQ	
APPROVED	NO	
DE APPR.	CP <i>CP</i>	SADDLE
DATE	19.01.28	



Constellium Rolled Products
Ravenswood, LLC

S
H
I
P
T
O

COPPER & BRASS SALES, INC
1500 CHEROKEE PARKWAY SUITE 120
ACWORTH GA
30102
US

S
O
L
D
T
O

COPPER & BRASS SALES
PO BOX 5116
SOUTHFIELD MI
48086
US

COPPER&BR		110738030		2994F		INCLUSION		Serial:20190223-0110738030		Pg 3of4	
CUSTOMER PURCHASE ORDER NO. & ITEM 5400430914-R05						Constellium ORDER NO. 268487					
ALLOY 7050	CLAD	TEMPER T7451	GUAGE 4.50000 in 114.30 mm	WIDTH 60.50000 in 1,537 mm	LENGTH 144.50000 in 3,670 mm	CERTIFICATION "Constellium Rolled Products, hereby certifies that metal shipped under this order has been inspected and found in conformance with the requirements of the applicable specifications as indicated herein. Any warranty is limited to that shown on Constellium Rolled Products' standard General Terms and Conditions of Sales. Test reports are on file, subject to examination." Constellium Rolled Products, Ravenswood, LLC 859 Century Road P.O. BOX 88 RAVENSWOOD, WV 26184 USA Dave Dunberger - Laboratory Manager					
ITEM ORDERED SPEC PLATE, SAWED MILL FINISH											
CUSTOMER SPECIFICATION BMS 7-323E TYPE I											
PART NUMBER ALFLR01070		B/L NUMBER 113828		DATE SHIPPED 02/24/2019							
WT. SHIPPED 8130.000 LB		NO. OF PIECES 000002		GOVT. CONTRACT NO. GLOBID							
FRACTURE TOUGHNESS (SI)											
Direction		Result MPa (SQRT.M.)									
L-T (KIC)		33									
S-L (KIC)		28									
T-L (KIC)		29									
STRESS CORROSION FACTOR NC24.6 SQ25.2											
113485											
Conductivity % IACS MIN 40.6 MAX 40.7 % MS/M MIN 23.5 MAX 23.6											
Chemistry (Actual)											
	SI	FE	CU	MN	MG	CR	ZN	TI	ZR		
Core	0.05	0.08	2.17	0.00	2.02	0.00	6.15	0.04	0.09	105809 105810 105811	
OTHERS-EACH: .05 MAX. OTHERS TOTAL: .15 MAX. AL REMAINDER											
All material contained in this lot was cast and manufactured in the USA											
RECEIVED MAR 19 2019											
P-860-155D REVISED: 01 2018											

From: TK Materials CA, Ltd.

Cust. E T M INDUSTRIES INC

CstAr 105809/10/11

Xgt.: 1,201.401 LB

Del.: 2406617006

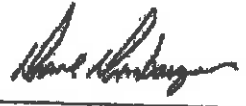
CstOr 113485

Date 03/14/2019

Thomas Sanchez

S H I P T O
COPPER & BRASS SALES, INC
1500 CHEROKEE PARKWAY SUITE 120
ACWORTH GA
30102
US

S O L D T O
COPPER & BRASS SALES
PO BOX 5118
SOUTHFIELD MI
48086
US

COPPER&BR		110738030		2994F		INCLUSION		Serial:20190223-0110738030		Pg 2of4	
CUSTOMER PURCHASE ORDER NO. & ITEM 5400430914-R06						Constellium ORDER NO. 288487		CERTIFICATION "Constellium Rolled Products, hereby certifies that metal shipped under this order has been inspected and found in conformance with the requirements of the applicable specifications as indicated herein. Any warranty is limited to that shown on Constellium Rolled Products' standard General Terms and Conditions of Sales. Test reports are on file, subject to examination." Constellium Rolled Products Ravenswood, LLC 859 Century Road P.O. BOX 88 RAVENSWOOD, WV 26164 USA  Dave Dunbar - Laboratory Manager			
ALLOY 7050	CLAD	TEMPER T7451	GAUGE 4.50000 in 114.30 mm	WIDTH 60.50000 in 1,537 mm	LENGTH 144.50000 in 3,670 mm						
ITEM ORDERED SPEC PLATE, SAWED MILL FINISH											
CUSTOMER SPECIFICATION BMS 7-323E TYPE I											
PART NUMBER ALFLR01070			B/L NUMBER 113828		DATE SHIPPED 02/24/2019						
WT. SHIPPED 8130.000 LB		NO. OF PIECES 000002		GOVT. CONTRACT NO. GLOBID							

Tensile - Room Temperature (SI)								
		Ultimate (N/MM2)		Yield (N/MM2)		Elongation (%)		Report
Direction	Tests	Min	Max	Min	Max	Min	Max	
L	02	512	513	459	481	11.0	11.6	
LT	02	516	519	450	484	9.5	10.0	
ST	02	492	495	421	421	8.0	6.0	

Fatigue		Minimum Fatigue: 300.0 KCycles	Report: WM 20919001189
		Fatigue Log Average: 300.0 KCycles	

FRACTURE TOUGHNESS (US)	
Direction	Result KSI (SQRT.IN.)
L-T (KIC)	30.4
S-L (KIC)	25.7
T-L (KIC)	26.8

113485

105809

105810

105811

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MAR 19 2019

P-860-155D REVISED: 01 2018

From: TK Materials CA, Ltd.

Cust. E T M INDUSTRIES INC

CstAr 105809/10/11

Wgt.: 1,201.401 LB

Del.: 2406617006

CstOr 113485

Date 03/14/2019

Thomas Savary

Constellium

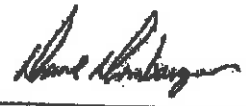
Materials Testing Laboratory

Constellium Rolled Products
Ravenswood, LLC

SHIP TO
COPPER & BRASS SALES, INC
1500 CHEROKEE PARKWAY SUITE 120
ACWORTH GA
30102
US

SOLD TO
COPPER & BRASS SALES
PO BOX 5116
SOUTHFIELD MI
48086
US

COPPER&BR 110738030 2994F INCLUSION Serial:20190223-0110738030 Pg 1of4

CUSTOMER PURCHASE ORDER NO. & ITEM 5400430914-R05				Constellium ORDER NO. 288487		CERTIFICATION "Constellium Rolled Products, hereby certifies that metal shipped under this order has been inspected and found in conformance with the requirements of the applicable specifications as indicated herein. Any warranty is limited to that shown on Constellium Rolled Products' standard General Terms and Conditions of Sales. Test reports are on file, subject to examination." Constellium Rolled Products Ravenswood, LLC 859 Century Road P.O. BOX 88 RAVENSWOOD, WV 26164 USA  Dave Dunbar - Laboratory Manager
ALLOY 7050	CLAD	TEMPER T7451	GAUGE 4.5000 in 114.30 mm	WIDTH 60.5000 in 1,537 mm	LENGTH 144.5000 in 3,670 mm	
ITEM ORDERED SPEC PLATE, SAWED MILL FINISH						
CUSTOMER SPECIFICATION BMS 7-323E TYPE I						
PART NUMBER ALFLR01070		B/L NUMBER 113828		DATE SHIPPED 02/24/2019		
WT. SHIPPED 8130.000 LB		NO. OF PIECES 000002		GOVT. CONTRACT NO. GLOBID		

ALL LOTS ON THIS CERTIFICATION ALSO CONFORM TO THE FOLLOWING REQUIREMENTS:

ASTM B594 REV 13 2013 100% SONIC W/ 0.12" DEADZONE Class A
 AMS 4050J
 AMS-STD-2154C 2017 TYPE1 CLASS A 100% SONIC MINUS DEADZONE
 BAMS 518-003 REV B
 BSS-7055B 2013 CLASS A 100% SONIC TESTED MINUS DEADZONE
 DMS 2233G
 DPS 4.713 REV AK 2012 CLASS A 100% SONIC MINUS DEADZONE
 GAMPB 9101 REV B 2006 CLASS A 100% SONIC MINUS DEADZONE
 MMS 1420G

Load Details

Package	Net Lbs	Kg	Lot	Piece	Serial	Parent Lot
1001989372	4,065.000	1,843.851	9444752	01		
1001989373	4,065.000	1,843.851	9444752	02		

Lot: 9444752 (See test results below)

Tensile - Room Temperature (US)

Direction	Tests	Ultimate (KSI)		Yield (KSI)		Elongation (%)		Report
		Min	Max	Min	Max	Min	Max	
L	Q2	74.2	74.4	88.5	88.9	11.0	11.5	
LT	Q2	74.8	75.3	85.3	85.8	9.5	10.0	
ST	Q2	71.3	71.8	81.0	81.0	8.0	8.0	

PO# 113485
105809
105810
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MAR 19 2019

P-860-155D REVISED: 01 2018

From: TK Materials CA, Ltd.

Cust. E T M INDUSTRIES INC

CstAr 105809/10/11

Wgt.: 1,201.401 LB

Del.: 2406617006

CstOr 113485

Date 03/14/2019

Thomas Sanchez



DELIVERY NOTE COPY

E T M INDUSTRIES INC
310 HALL AVE
RENFREW ON K7V 2S5

DATE: 03/19/2019
DOC. NO: 2406617006*
BOL. NO: 2406617006
ORDER NO: 1403986850
YOUR P/O: 113485
CUSTOMER NO: 10058273
Route: 303UB
CONTACT: Lynn Philibert
TEL: 514-789-1660
FAX: 514-745-2968
EMAIL: lynn.philibert@thyssenkrupp.co
m

CERTIFICAT DE CONFORMITÉ/CERTIFICATE OF COMPLIANCE

*thyssenkrupp Matériaux NA certifie que le matériel décrit ci-dessus est conforme aux dessins ou spécifications exigés sur le bon de commande et qui sont en vigueur à la date où la commande a été acceptée. / thyssenkrupp Materials NA certifies that the material described above is in accordance with the drawings or specifications called for on said order that are current on the date order was accepted.

*Nous certifions que le document reproduit ici est une copie conforme du rapport fourni par le fournisseur du matériel où les données résultent de l'analyse faite par un laboratoire qualifié. / We certify that the document reproduced here is true to the report provided by the equipment supplier where the data are the result of analysis by a qualified laboratory.

David Noordine - Director of Quality Assurance

105809
105810
105811

RECEIVED

MAR 19 2019



thyssenkrupp Materials NA 4700 chemin du Bois-Franc, Saint-Laurent, QC H4S 1A7

DELIVERY NOTE COPY



E T M INDUSTRIES INC
310 HALL AVE
RENFREW ON K7V 2S5

15641

DATE: 03/19/2019
DOC. NO: 2406617006*
BOL. NO: 2406617006
ORDER NO: 1403986850
YOUR P/O: 113485
CUSTOMER NO: 10058273
Route: 303UB
CONTACT: Lynn Philibert
TEL: 514-789-1660
FAX: 514-745-2968
EMAIL: lynn.philibert@thyssenkrupp.co
m

MTR'S AND COFC'S REQUIRED WITH EVERY SHIPMENT

EMAIL TO JLOWE@ETMINDUSTRIES.ON.CA*

MUST INCLUDE THE FOLLOWING INFORMATION:
COMPANY NAME, SALES ORDER#, P.O.#, ITEM#, AND
DESCRIPTION OF PRODUCT &
SPECIFICATIONS (IE. ASTM SPECS)

DO NOT CHARGE ENERGY SURCHARGE (JUNE 2011)

> CLOSE AT NOON ON FRIDAY <

Client: E T M INDUSTRIES INC Renfrew, ON K7V 4E7, CA

Deliveries are carried out for your account and risk acc. to our Gen. Terms & Cond. of Delivery and Payment.

ITEM	DESCRIPTION	NET QTY1 / QTY2	PACKAGE
0010	ALFLR01070 7050 Aluminum T7451 US1 Type1 Plate 4.50000 (+-.145) X Width 8.1250 +.1250 X Length 13.2500 +.1250 Plate Sawing - Standard Actual Chemistry/Act. Physical Standard Packaging Cust Part No.: 105809/10/11	24 PC 1,201.401 lb	1009623078
TAGNUM	QTY	UOM	VEND
1014853195	24	PC	CONSTELLI
SAE AMS 4050J; SAE AMS-STD-2154 TYP 1 CL A; BAMS 516-003 REV B; BMS7-323 Type 1; BSS			
7055J; A; DMS 2233J; 2006; DPS 4.713 CL A; GAMPS 9101 CL A; MMS 1420J; ASTM B 594J; 2013 CL A			

Total Gross Weight 1251.401 lb

All items, not declared as partial delivery, are final quantities.
Delivery Terms: PPD gem. Incoterms 2000 Prepaid PREPAID

DART.

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MAR 19 2019